

This listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

Claim 1 (Currently Amended): In a computer system having an operating system and a compressed main memory defining a physical memory and a real memory characterized as [[an]] fixed amount of main memory as seen by a processor, and including a compressed memory hardware controller device for controlling processor access to said compressed main memory, a compressed main memory control device for managing real memory usage comprising:

compressed memory device driver for receiving real memory usage information from said compressed memory hardware controller, said information including a characterization of said at least one real memory usage state:

compression management subsystem for monitoring said memory usage and initiating memory allocation and memory recovery in accordance with said at least one memory usage state, said subsystem including mechanism for adjusting memory usage thresholds for controlling memory state changes,

whereby control of said real memory usage in said computer system is accomplished without modification to an operating system kernel and transparent to said operating system.

Claim 2 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said memory controller hardware includes an interrupt generator mechanism for generating an interrupt indicating memory usage exceeding a physical real memory usage threshold, said characterization of said real memory usage including a memory state set according to an amount of physical memory used.

Claim 3 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim [[1]] 2, wherein said memory controller hardware includes one or more threshold registers associated with a physical memory usage threshold, said interrupt being generated when a usage threshold value is exceeded.

Claim 4 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim [[1]] 3, wherein said compressed memory device driver further includes mechanism responsive to said interrupt for adjusting said physical memory usage threshold value in accordance with a current memory usage state.

Claim 5 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim 3, wherein a current memory usage threshold value includes a value associated with [[a]] each said at least one memory state including one of a steady state, warning state and emergency state, wherein said threshold values for each state are governed according to:

steady state threshold < warning threshold < emergency threshold.

Claim 6 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said compressed memory device driver further includes mechanism responsive to said interrupt for broadcasting low physical memory usage interrupts to client applications running on said computer system.

Claim 7 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein [[a]] said at least one memory state includes one of a steady state, warning state and emergency state according to said thresholds, said device driver including polling mechanism for polling said memory controller and determine if a threshold should be readjusted downward when in said warning state and emergency state.

Claim 8 (Currently Amended): The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein each said memory usage threshold is programmable by a user, said compressed memory device driver comprising an interface to said memory controller hardware for ~~enabling a user to set~~ setting a memory usage threshold.

Claim 9 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 5, wherein said compression management subsystem includes mechanism for generating one or more memory eater processes for performing one of: allocating to or releasing said memory from said system.

Claim 10 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 9, wherein a number of memory eater processes generated is dependent upon a total real memory amount to recover from said system.

Claim 11 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 10, wherein said total real memory amount to recover from said system is equal to a quantity representing a difference between a total amount of real memory as seen by the operating system and a total amount of physical memory in the system.

Claim 12 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 9, wherein said compression management subsystem includes mechanism for determining an adjustment amount comprising the amount of physical memory that needs to be allocated or released, said adjustment amount based on a boot compression ratio of said system.

Claim 13 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 5, wherein said compression management subsystem includes mechanism for generating one or more blocker processes for association with a single processor operating in said system, each blocker process binding to an associated processor and monopolizing processor time to prevent other applications running in said system from executing when memory usage exceeds said emergency state threshold.

Claim 14 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 12, wherein said compression management subsystem includes mechanism for allocating one or more pages of memory at a time.

Claim 15 (Original): The compressed main memory control device for managing real memory usage as claimed in Claim 1, wherein said real memory usage information includes memory compression statistics.

Claim 16 (Currently Amended): In a computer system having an operating system and a compressed main memory defining a physical memory and a real memory characterized as [[an]] fixed amount of main memory as seen by a processor, and including a compressed memory hardware controller device for controlling processor access to said compressed main memory, a method for managing real memory usage comprising the steps of:

receiving real memory usage information from said compressed memory hardware controller, said information including a characterization of said real memory usage state:

monitoring said memory usage and initiating memory allocation and memory recovery in accordance with said memory usage state; and,

adjusting memory usage thresholds for controlling memory state changes,

whereby control of said real memory usage in said computer system is accomplished without modification to an operating system kernel and transparent to said operating system.

Claim 17 (Original): The method for managing real memory usage as claimed in Claim 16, further including the step of generating an interrupts indicating memory usage exceeding a physical real memory usage threshold, said characterization of said real memory usage including a memory state set according to an amount of physical memory used.

Claim 18 (Currently Amended): The method for managing real memory usage as claimed in Claim [[16]] 17, wherein said memory controller hardware includes one or more threshold registers associated with a physical memory usage threshold, said interrupt being generated when a usage threshold value is exceeded.

Claim 19 (Original): The method for managing real memory usage as claimed in Claim 16, further including the step of adjusting said physical memory usage threshold value in accordance with a current memory usage state.

Claim 20 (Original): The method for managing real memory usage as claimed in Claim 19, wherein a current memory usage threshold value includes a value associated with a memory state including one of a steady state, warning state and emergency state, wherein said threshold values for each state are governed according to:

steady state threshold < warning threshold < emergency threshold.

Claim 21 (Original): The method for managing real memory usage as claimed in Claim 16, further including the step of broadcasting low physical memory usage interrupts to client applications running on said computer system.

Claim 22 (Original): The method for managing real memory usage as claimed in Claim 16, wherein a memory state includes one of a steady state, warning state and emergency state according to said thresholds, said method further including polling said memory controller hardware to determine if a threshold should be readjusted downward when in said warning state and emergency state.

Claim 23 (Currently Amended): The method for managing real memory usage as claimed in Claim 16, further including the step of ~~enabling a user to set~~ setting a memory usage threshold.

Claim 24 (Original): The method for managing real memory usage as claimed in Claim 20, further including the step of generating one or more memory eater processes for performing one of: allocating to or releasing said memory from said system.

Claim 25 (Original): The method for managing real memory usage as claimed in Claim 24, further including the step of determining a number of memory eater processes to be generated based upon a total real memory amount to recover from said system.

Claim 26 (Original): The method for managing real memory usage as claimed in Claim 25, further including the step of determining an adjustment amount comprising the amount of physical memory that needs to be allocated or released, said adjustment amount based on a boot compression ratio of said system.

Claim 27 (Original): The method for managing real memory usage as claimed in Claim 24, further including the step of generating one or more blocker processes for association with a single processor operating in said system, each blocker process binding to an associated processor and monopolizing processor time to prevent other applications running in said system from executing when memory usage exceeds said emergency state threshold.

Claim 28 (Currently Amended): The method for managing real memory usage as claimed in Claim 16, further including the step of allocating one or more virtual pages of memory at a time.

Claim 29 (New): The compressed main memory control device for managing real memory usage as claimed in Claim 9, wherein a memory eater process takes away physical memory from the system by replacing the data in virtual pages of memory with a highly compressible data.

Claim 30 (New): The method for managing real memory usage as claimed in Claim 24, wherein a memory eater process performs a step of removing memory from the system by replacing the data in virtual pages of memory with a highly compressible data.